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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Anders Johansson

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EXAMINER

BRUTUS, JOEL F

ART UNIT

PAPER NUMBER

3768

NOTIFICATION DATE

DELIVERY MODE

03/31/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DocketingDept@young-thompson.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/587,490	<b>Applicant(s)</b> JOHANSSON ET AL.	
	<b>Examiner</b> JOEL F. BRUTUS	<b>Art Unit</b> 3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1, 4-16 and 31-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4-16 and 31-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/23/2010 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 1 recites the limitation "the cartilage" in lines 21-22. There is insufficient antecedent basis for this limitation in the claim.

It is not clear what the claim is referring to; the preamble is directed to a device for analyzing a thickness of tissue.

Claims 13, 15 and 32-35 recite the limitations "the components". There is insufficient antecedent basis for this limitation in the claim. The word "component" is not mentioned anywhere in claims 1 or 4. It should have been --components-- without the "the"

Claims 14 and 16 are also rejected for the same reason as set forth above because it depends on claim 13.

4. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "illuminating the surface of tissue" it is not clear if only the surface is illuminated, the light would access the cartilage. It seems like the light has to go through the surface in order to attain the cartilage.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 4-6, 8-11, 13-16 and 31-35 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cane et al (Pub. No.: US 2001/0056237).

Regarding claims 1, 4, 10 and 31, Cane et al teach an apparatus comprises a light source for projecting light to illuminate an area a tissue sample; a photo-receptor

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(light detector, emphasis added) for receiving light remitted (backscattered, emphasis added) by the illuminated area of tissue, and a spectroscopic analyzer for monitoring the remitted light [see 0034]

Cane et al teach a comparator for comparing variations in the intensity and spectral characteristics of the remitted light with respect to the intensity and spectral characteristics of the projected light at different wavelengths and with data representing a datum sample of intensity and spectral characteristics of light and a signal emitter for emitting a control signal in response to any such variations [see 0032-0034].

Cane et al teach a probe with an extension arranged therein two bundles of optical fibers 4 and 5 [see fig 14 and 0188]; disclose the light is passed to a bundle of optical fibers 4 through which it is transmitted to the tissue and further teach the optical fibers 4, 5 run along an endoscope appropriate for the in vivo examination of internal epithelial tissue [see 0188].

Cane et al teach comparator 7 processes the intensity of lights backscattered from the tissue at different wavelengths and supplies the results to a processor 8 and to a display 9 or printer 10 [see fig 14]. Cane et al teach comparing the measured intensity of backscattered light from the tissue with a reference range for healthy tissue having a layered structure of a predetermined thickness [see 0019-0020] and based on the variation as indicated above determine the tissue thickness (emphasis added).

Cane et al teach measuring means for measuring remitted red or infrared radiation from at least one location over said area of skin so as to give an indication of the collagen thickness in said area [see 0038].

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Although Cane et al invention is used primarily to measure dermis layers of skin; Cane et al mention determining thickness of collagen rich layer [see 0021] and point out thickness of dermis over a joint will tend to be greater [see 0010].

Cartilage is a flexible connective tissue found in many areas in the body mainly joints between bones. Cartilage is composed primarily of collagen fibers. Therefore, Cane et al invention would be able to determine cartilage thickness based on intensities of backscattered light from the tissue at different wavelengths as claimed (emphasis added).

In the alternative, one skilled in the art at the time the invention was made would have been motivated to measure cartilage thickness; in order to diagnose joint disease.

Regarding claims 5 and 9, all other limitations are taught as set forth by the above teaching.

Cane et al teach means for monitoring intensity of light remitted with two dimensional array [see 0150].

Regarding claims 6, 8, 11, all other limitations are taught as set forth by the above teaching.

Cane et al disclose means for projecting UV and/or visible and/or red and/or infrared radiation onto an area of skin under investigation [see 0037] and white light [see 0197].

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Cane et al teach a filter wheel 2 on fig 14 which contains a number of holes 21-26 and each of which may be brought into light path and left at least one hole empty to allow light from source 1 to pass [see 0185]. The filter wheel can block the reference and measured light and only allow white light through (emphasis added).

Regarding claims 13-16 and 32-35, all other limitations are taught as set forth by the above teaching.

Cane et al teach wavelength range of 694 nm to 940 nm [see 0194] and near infrared region [see 0141].

7. Claims 7 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Cane et al (Pub. No.: US 2001/0056237) in view of Kaneko et al (US Pat: 5,305,759).

Regarding claims 7 and 12, all other limitations are taught as set forth by the above teaching.

Cane et al don't teach multiplexing.

However, Kaneko et al teach multiplexing reflecting lights [see column 35 lines 30-40].

Therefore, one with ordinary skill in the art at the time the invention was made would have been motivated to combine Cane et al with Kaneko et al by using multiplexing; for the purpose of allowing multiple analog message signals or digital data streams to be combined into one signal over a shared medium; to reduce cost by sharing an expensive resource.

***Response to Arguments***

8. Applicant's arguments with respect to claims 1, 4-16 and 31 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that Cane et al don't teach measuring cartilage thickness and measure skin color.

The examiner disagrees because Cane et al teach measuring means for measuring remitted red or infrared radiation from at least one location over said area of skin so as to give an indication of the collagen thickness in said area [see 0038].

Although Cane et al invention is used primarily to measure dermis layers of skin; Cane et al mention determining thickness of collagen rich layer [see 0021] and point out thickness of dermis over a joint will tend to be greater [see 0010].

Cartilage is a flexible connective tissue found in many areas in the body mainly joints between bones. Cartilage is composed primarily of collagen fibers. Therefore, Cane et al invention would be able to determine cartilage thickness based on intensities of backscattered light from the tissue at different wavelengths as claimed (emphasis added).

In the alternative, one skilled in the art at the time the invention was made would have been motivated to measure cartilage thickness; in order to diagnose joint disease.



***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL F. BRUTUS whose telephone number is (571)270-3847. The examiner can normally be reached on Mon-Fri 7:30 AM to 5:00 PM (Off alternative Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571)272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. F. B./  
Examiner, Art Unit 3768

/Long V Le/  
Supervisory Patent Examiner, Art Unit 3768